

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

REC'D 24 MAY 2004

WIPO PCT

Applicant's or agent's file reference P200200975 WO	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP 03/09034	International filing date ( <i>day/month/year</i> ) 14.08.2003	Priority date ( <i>day/month/year</i> ) 06.09.2002
International Patent Classification (IPC) or both national classification and IPC H03B5/36, H03B5/36		
Applicant TELEFONAKTIEBOLAGET L M ERICSSON (PUBL) ET AL.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
  
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
 

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of    sheets.

3. This report contains Indications relating to the following items:
 

I    ☒ Basis of the opinion

II   ☐ Priority

III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability



IV   ☐ Lack of unity of invention

V    ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

VI   ☐ Certain documents cited

VII ☐ Certain defects in the international application

VIII ☐ Certain observations on the international application

Date of submission of the demand  27.02.2004	Date of completion of this report  24.05.2004
Name and mailing address of the international preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  Beasley-Suffolk, D  Telephone No. +31 70 340-4251  

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 03/09034**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-19 as originally filed

**Claims, Numbers**

1-18 as originally filed

**Drawings, Sheets**

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-18
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-18
Industrial applicability (IA)	Yes: Claims	1-18
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

D1: EP-A-0 767 532 (SONY CORP) 9 April 1997 (1997-04-09)

D2: EP-A-1 215 812 (NOKIA CORP) 19 June 2002 (2002-06-19)

D3: EP-A-0 335 493 (TOKYO SHIBAURA ELECTRIC CO) 4 October 1989 (1989-10-04)

1. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1 to 18 does not involve an inventive step in the sense of Article 33(3) PCT.

2. Using the wording of present claim 1, D1 figure 2 describes:

A balanced crystal oscillator comprising:

a piezoelectric element (9), a first oscillator subcircuit incorporating a transistor (81); and a second oscillator subcircuit incorporating a transistor (82); wherein the transistors each have different types of transistor terminals, and wherein the oscillator subcircuits are configured to have at least three interconnections; each interconnection comprises a pair of like type transistor terminals; wherein a first of said interconnections comprises a connection to a ground reference (via 90); a second of said interconnections is via a first resonator element (9); a third of said interconnections is via a second resonator element (87); and first and second circuits are arranged to interact by means of said first and second resonator elements to form a balanced oscillator signal.

Claim 1 therefore differs from D1 in that it includes a piezoelectric element as a resonator.

The use of a particular type of resonator in an oscillator is simply a design choice, in this case between a piezoelectric resonator and a surface acoustic wave resonator, which the skilled person would make, according to the circumstances, without the exercise of any inventive skill during the design of an oscillator according to D1. Therefore the subject-matter of claim 1 does not involve an inventive step (Article 33(3) PCT).

3. The additional features of dependent claims 2 to 10 relate to construction details of an oscillator designed according to the principle described in claim 1. These features are normal design features of oscillators which the skilled person would incorporate as a matter of course while implementing the design of claim 1. Many of the features are known explicitly from D1, especially figure 3. Therefore the subject-matter contained in these claims is not inventive.

4. The subject-matter of claims 11 to 14 relates to an alternative implementation of the oscillator of claim 1, in which FETs are used rather than BJTs. In many cases, the use of either of these types of transistor is purely optional, the choice between types being made solely in accordance with circumstances and at the discretion of the skilled person, without the exercise of any inventive skill. Additionally, it is clear that in this case the choice of either bipolar junction or field effect transistors has no effect on the overall oscillator, and does not contribute to solving the problem posed. Therefore the subject-matter of these claims is not inventive.

5. The subject-matter of claim 15, including a filter to suppress unwanted modes in the oscillator, is well known in the art and therefore not inventive.

6. The subject-matter of claims 16 to 18 relates simply to the inclusion of an oscillator according to the above claims in various systems. Such implementation involves no additional inventive effort.

7. The prior art documents D1, D2 and D3 have not been included or discussed in the description, as required by Rule 5.1(1)(ii) PCT.